

27

5,631,946

28

APPENDIX

5,631,946

29

30

Copyright Thomas Campana, Jr. 1991

#define ATT_EMAIL_FILE
#define DELIMITER

"TFMBOX.TMP"
"End of Telefind Network Message\r"

5,631,946

31

32

```

#include <string.h>
#include <time.h>
#include <stdio.h>
#include <sys.h>
#include "server.h"

void main(void)
{
    FILE *infile, *outfile;
    char buffer[51], chr, timestr[5], deststr[9];
    char msg_num[4];
    int msg_num_opt = 0;
    char *ptr;
    int x, day, month, line=1, attmail=0;
    time_t t;

    if ((infile = fopen(ATT_EMAIL_FILE, "rt")) == NULL)
    {
        printf("File does not exist\n", ATT_EMAIL_FILE);
        exit(0);
    }
    if ((outfile = fopen("fmsbox.S33", "wt")) == NULL)
    {
        printf("Can't open fmsbox.S33\n");
        exit(0);
    }

    for(;;)
    {
        /* get characters from .tmp file */
        x = 0;
        do
        {
            chr = fgetc(infile);
            if (feof(infile))
            {
                fclose(infile);
                fclose(outfile);
                exit(0);
            }
            buffer[x++] = chr;
        }
        /* until end of line */
        while (chr != '\n' && x != 50);

        buffer[x] = '\0'; /* terminate it */

        if (line == 1)
        {
            ptr = strchr(buffer, ':');
            if (ptr-buffer == 2) /* was 3rd character */
            {
                memcpy(buffer, "%X", msg_num);
                msg_num_opt = 1;
                ptr++;
            }
            else
                ptr = buffer;

            if (*ptr == ':' && *(ptr+3) == '0')
                attmail = 1;
        }

        if (attmail)
        {
            switch(line)

```

5.631,946

33

34

```

(
    case 1:
        /*      datestr = mm/dd, timestr = hh:mm      */
        sscanf(datestr,"%d/%d",&month,&day);          /*
        /*      get year from pc      */

        t = time(NULL);
        fprintf(outfile,"Date: %s",ctime(&t));
        break;

    case 2:
        fprintf(outfile,"From: %s",buffer);
        break;

    case 3:
        fprintf(outfile,"Subject: %s",buffer);
        fprintf(outfile,"To: <Name here>\n");
        if (msg_num_opt)
            fprintf(outfile,"Message #%s\n",msg_num);
        break;

    default:
        fprintf(outfile,"%s",buffer);
        break;
}
}
else
(
    if (line == 1)
    (
        t = time(NULL);
        fprintf(outfile,"Date: %s",ctime(&t));
        fprintf(outfile,"From: tfmobox\n");
        fprintf(outfile,"Subject: Telefind Network Message\n");
        fprintf(outfile,"To: <Name here>\n");
        if (msg_num_opt)
        (
            fprintf(outfile,"Message #%s\n",msg_num);
            fprintf(outfile,"%s",buffer+3);
        )
        else
            fprintf(outfile,"%s",buffer);
    )
    else
        fprintf(outfile,"%s",buffer);
}

if (strcmp(buffer,DELIMITER) == 0)
(
    msg_num_opt = line = attmail = 0;
)

line ++;
}

```

5,631,946

35

36

```

/*
    Author:      MICHAEL P. PONSORKE, SR.
                  03/13/91

    Program:     SAFARI3.C
    Purpose:     TO EXTRACT MESSAGES FROM A TELEFONO PAGER
                  VIA RS-232 PORT ON A PC

    Compiler:    TURBO C++ 1.0
    Memory Model: SMALL
*/

#include <dos.h>
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <stdlib.h>
#include "safari.h"

/*      CONSTANTS      */

#define DTR_HI      0x01
#define DTR_LO      0x0e
#define RTS_HI      0x02
#define RTS_LO      0x0d
#define CSR_HI      0x20
#define RING_HI     0x40
#define CD_HI       0x80
#define FIVE_TICK   5
#define FIVE_SEC     96
#define TWELVE_SEC   220
#define LOG_FILE     "LOG"
#define INTRO_STRING "Please standby, retrieving messages ..."

/*      FUNCTION PROTOTYPES      */

int beep(void);
void busyoff(void);
void busyon(void);
void diaoff(void);
void dison(void);
int link(void);
void print_message(void);
int rxdata(void);
int strobe(void);
int strobe_data(void);
unsigned ticks(void);
int timeout(unsigned start, int delay);

/*      VARIABLE DECLARATIONS      */

char pager_buffer[511];
int com_base, control_reg, status_reg, log_flag;
FILE *log_file;

void main(int num_arg, char **args)
{
    unsigned start;
    int restart, x;

    com_base = 0x3f8; /* use com 1 unless command line denotes otherwise */

    /*      get command line arguments      */

```

37

5,631,946

38

```

/* all command line arguments begin with a single '-' and
must be separated by a single space between each other
and the program name

-1 Use CDR part 1
-2 Use CDR part 2
-f Log all activity to a file named LOG */

if (num_arg > 1)
{
    for (x=1; x<num_arg; x++)
    {
        if (strcmp(argv[x], "-1") == 0)
            com_base = 0x3f8;
        if (strcmp(argv[x], "-2") == 0)
            com_base = 0x2f8;
        if (strcmp(argv[x], "-f") == 0)
            log_flag = 1;
    }
}

if (log_flag)
    if ((log_file = fopen(LOG_FILE, "a+")) == NULL)
        printf("Unable to open LOG\n");

control_reg = com_base + 4;
status_reg = com_base + 6;

clrscr();

if (!link) == 0) /* is pager attached ? */
{
    printf("Please attach Message Receiver \n");
    exit(0);
}

busyon(); /* start busy at logic high */

if (log_flag)
    fprintf(log_file, "Initiating process \n");
printf("MAY\n", (RTND_STB)AC);
disout(); /* push display button */
sleep(2);
do
{
    start = ticks();
    restart = 0;
    do
    {
        if (Deep())
        {
            print_message();
            restart = 1;
            start += TWELVE_SEC;
            break;
        }
    }
    /* hold display button for 12 seconds */
    while(! timeout(start, TWELVE_SEC));
}
while(restart);

disoff(); /* release the display button */
if (log_flag)
{
    fprintf(log_file, "Process Complete \n");
}

```

5,631,946

39

40

```

        fclose(log_file);
    }

}

/*      pager beep      */
int beep(void)
{
    /*      accesses the B1 line via the Status Register
        which is activated when the pager beeps      */

    unsigned start;

    start = ticks();
    while ( ! timeout(start,FIVE_TICKS))
    {
        if ((inportb(status_reg) & RING_IN) == 0 )
            return(1);
    }
    return(0);
}

/*      busyon & busyoff toggle the DTR line via the
    Control Register to strobe in data from the pager      */
void busyon(void)
{
    outportb(control_reg,inportb(control_reg) | DTR_HI);
}

void busyoff(void)
{
    outportb(control_reg,inportb(control_reg) & DTR_LO);
}

/*      dican & disoff toggle the RTS line via the Control Register
    to simulate the pressing of the display button on the pager      */
void dican(void)
{
    outportb(control_reg,inportb(control_reg) | RTS_HI);
}

void disoff(void)
{
    outportb(control_reg,inportb(control_reg) & RTS_LO);
}

int link(void)
{
    /*      accesses the CD line via the Status Register
        which is logic high when pager is connected      */

    if ((inportb(status_reg) & CD_HI) == 0)
        return(0);
    return(1);
}

void print_message(void)
{
    FILE *file;
    unsigned start;
    int x,y=0,z=0,chr,bit;

```

5,631,946

41

42

```

busyoff(); /* ready to accept pager data */
/* read until end code received */
while (chr != 3)
{
    chr = 0;
    start = ticks();

    /* wait for start bit */
    do
    {
        bit = strobe();
        if (bit == 0)
            break;
    }
    while (!timeout(start, FIVE_SEC));

    if (bit)
    {
        if (log_flag)
            fprintf(log_file, "Transmission Error, recheck connection\n");
        perror();
        exit(0);
    }

    /* strobe out 8 bit data */
    for (x=0; x<8; x++)
    {
        chr <<= 1;
        chr |= bit < strobe_data();
    }

    /* clear out stop bits */
    for (x=1; x<3; x++)
    {
        strobe_data();
    }

    /* extract start and end codes from message
    pager signon    02, 10, 00, 33
    pager signoff   03 */
    if ((y > 3) && (chr != 3))
    {
        /* pager characters 06 and 07 are converted to
        0x7A and 0x7B to display on pager */
        if (chr == 0x06) /* convert to CR */
            chr = '\n';
        if (chr == 0x07) /* convert to TAB */
            chr = 0x09;

        pager_buffer[z] = chr;
        z++;
    }
    y++;
}

pager_buffer[z] = '\0'; /* null terminate */
busyon(); /* finished receiving data */

```


43

5,631,946

44

```

    if (log_flag)
        fprintf(log_file, "%s\n", pager_buffer);

    if ((file = fopen(ATT_SATL_FILE, "at")) == NULL)
        fprintf(log_file, "Unable to open TFMQBOX.TMP\n");
    else
    {
        fprintf(file, "%s\n", pager_buffer);
        fprintf(file, "%s", BE[ITER]);
        fclose(file);
    }

    start = ticks();
    while(!timeout(start, FIVE_SEC))
    {
        /* wait for erase beep */
        if (beep()) break;
    }
    sleep(1); /* wait one more second */
}

int rdata(void)
{
    /* accesses the DSR line via the Status Register
       which returns the bits value */
    if (!inportb(status_reg) & DSR_M1)
        return(0);
    return(1);
}

int strobe(void)
{
    int bit;

    busyon();
    delay(1);
    busyoff();
    delay(4);
    bit = rdata();
    return(bit);
}

int strobe_data(void)
{
    int bit;

    busyon();
    delay(2);
    bit = rdata();
    busyoff();
    delay(1);
    return(bit);
}

unsigned ticks(void)
{
    /* returns timer ticks (approx. 18.2/sec)
       using only lower registers */

    union REGS in, out;

    in.x.ax = 0x0;
    int86(0x10, &in, &out);
    return out.x.ax;
}

```

5,631,946

45

46

```

}
int timeout(unsigned start, int delay)
{
    /*      used for timing events of up to approx. 1 hour.
           used in conjunction w/ticks()      */

    unsigned current;

    current = ticks();
    if (start <= current && (start + delay) < current)
        return(1);
    if (start > current && (start - 65535 + delay) < current)
        return(1);
    return(0);
}

```

5,631,946

47

48

```

/* mark the end of the command line you built, so you can add ending
   delimiter */
sys_command[i] = NULL;
/* Add the ending quote for the users message so shell wont
   interpret special characters */
strcat(sys_command, "\"");
/* execute command you built */
system(sys_command);

printf("sending message: %s\n", sys_command);
}
else {
    if(strlen(msg) == 0) {
        return(0);
    }
    /* print error for invalid message length */
    printf("telemail error: invalid message length: %s\n", msg);
    return(0);
}

return(1);
}

.....
- function: getline(hold-buffer, input-file-pointer)
- arguments: pointer to buffer where line read will be held.
-             file pointer to input file
- description: reads 1 line of text from the input line and stores the
-              line read into the buffer passed.
- returns: -1 if EOF or number of characters read in
...../
getline(buff, fp)
char *buff;
FILE *fp;
{
    int ch, cnt;

    /* keep on reading characters from file so long as end of file not
       reached or char is the end of line */
    for(cnt = 0; ((ch = fgetc(fp)) != EOF) && ch != '\n'; cnt++) {
        /* MOD BY OT 11/29/90 convert tab to space */
        /* convert tabs to single space */
        if(ch == '\t') {
            ch = ' ';
        }
        /* MOD BY OT 11/29/90 dont allow control char */
        /* only load in ascii characters */
        if(isprint(ch) != 0) {
            buff[cnt] = ch;
        }
        else {
            /* turn control characters to spaces */
            buff[cnt] = ' ';
        }
    }

    /* mark the end of the buffer you built */
    buff[cnt] = '\0';

```

5,631,946

49

50

```

.....
*
*  function: send_msg(message-pointer)
*  arguments: pointer to text message (capcode, text) to be sent
*  description: takes passed message text makes sure the first 8 positions
*               are numeric (capcode). it builds and executes the network
*               send command (netsend.sh) to send the message passed.
*  returns: 0 if not sent otherwise the number of characters sent out
*
...../
int send_msg(msg)
char *msg;
{
    char sys_command[700];
    int i;
    int ch;
    char *msg_ptr;

    /* trim leading spaces from the message passed to remove leading spaces */
    strstrip(msg, 1);
    /* trim off trailing blank spaces from the message */
    strtrim(msg);

    /* make sure you have a capcode at least */
    if(strlen(msg) > 8) {

        /* start to build the command to be executed to send message retrieved
        from the mail box */
        strcpy(sys_command, "netsend.sh ");

        /* loop while still more characters in the message */
        for(msg_ptr = msg, i = 1; *msg_ptr != NULL; i++, msg_ptr++) {

            /* make sure the first 8 positions of the message are numeric */
            if((i < 19) && (*msg_ptr < '0' || *msg_ptr > '9')) {
                printf("telemail error: invalid capcode: %s\n", msg);
                return 0;
            }

            /* is the user didnt separate capcode & message then insert a
            space into the command */
            if(i == 19 && *msg_ptr != ' ') {
                sys_command[19] = ' ';
                i = 20;
            }

            /* enclose the users message with ' so shell wont interpret
            special characters */
            if(i == 20) {
                sys_command[20] = '\'';
                i = 21;
            }

            /* put the character from the message onto to the
            command to be executed */
            sys_command[i] = *msg_ptr;
        }
    }
}

```

5,631,946

51

52

```

/* since your just starting clear the message area */
memset(msg, NULL, MAXMSGLEN);

/* keep on getting lines from the file until you reach end of file */
while(getline(buff, fp) != -1) {

    /* every mail message start with the word "From " */
    if(strncmp(buff, "From ", 5) == 0) {
        /* set flag telling you are currently going thru mail header
        so you dont add it to the message */
        in_header = 1;
        /* call routine to the last message if any exists */
        send_msg(msg);
        continue;
    }

    /* a mail header end with the following string */
    if(strncmp(buff, "Content-Length:", 15) == 0) {
        /* turn off flag so you know you are no longer in mail
        message header */
        in_header = 0;
        /* clear the old message since this is a new one */
        memset(msg, NULL, MAXMSGLEN);
        continue;
    }

    /* if the line you are now reading is not part of the mail header
    add it to the message */
    if(in_header == 0) {
        strljust(buff, 512);
        strtrim(buff);
        /* make sure you dont add more than the message length */
        if (strlen(buff) + strlen(msg) < MAXMSGLEN) {
            strcat(msg, " ");
            strcat(msg, buff);
        }
    }
}

/* end of read line while */

/* send the last message in the file */
send_msg(msg);
}

```

5,631,946

53

We claim:

1. A system for transmitting originated information from one of a plurality of originating processors contained in an electronic mail system to at least one RF receiver with the originated information originating from one of the plurality of originating processors and being transmitted by an RF information transmission network to the at least one RF receiver and for transmitting other originated information originating from one of the originating processors with the electronic mail system without using the RF information transmission network to at least one of a plurality of destination processors comprising:

at least one interface, one of the at least one interface connecting the electronic mail system containing the plurality of originating processors to the RF information transmission network; and wherein

the originated information is transmitted in association with an address of the one interface from the one of the plurality of originating processors to the one interface with the electronic mail system responding to the address of the one interface to direct the originated information from the one of the plurality of originating processors to the one interface; and

the originated information is transmitted from the one of the at least one interface to the RF information transmission network with an address of the at least one RF receiver to receive the originated information being associated with the originated information before transmission of the originated information to the at least one RF receiver.

2. A system in accordance with claim 1 wherein:

a processor is coupled to one of the at least one RF receiver and receives the originated information.

3. A system in accordance with claim 1 wherein:

the one interface stores the originated information, assembles the originated information with originated information received from a plurality of the originating processors into a packet and transmits the packet to the RF transmission network.

4. A system in accordance with claim 1 wherein:

the other originated information is transmitted between the one of the plurality of originating processors and the at least one of the plurality of destination processors using a different address than the address used during transmission of the originated information to the at least one RF receiver by the RF information transmission network.

5. A method for transmitting originated information from one of a plurality of originating processors contained in an electronic mail system to at least one RF receiver with the originated information originating from one of the plurality of originating processors and being transmitted by an RF information transmission network to the at least one RF receiver and for transmitting other originated information originating from one of the originating processors with the electronic mail system without using the RF information transmission network to at least one of a plurality of destination processors comprising:

connecting the electronic mail system containing the plurality of originating processors to the RF information transmission network with one of at least one interface;

transmitting the originated information in association with an address of the one interface from one of the plurality of originating processors to the one interface with the electronic mail system responding to the

54

address of the one interface to direct the originated information from the one of the plurality of originating processors to the one interface; and

transmitting the originated information from the one of the at least one interface to the RF information transmission network with an address of the at least one RF receiver to receive the originated information being associated with the originated information before transmission of the originated information to the at least one RF receiver.

6. A method in accordance with claim 5 further comprising:

one of the at least one RF receiver transmits the originated information to a processor.

7. A method in accordance with claim 5 further comprising:

storing the originated information, assembling the originated information with originated information received from a plurality of the originating processors into a packet and transmitting the packet to the RF transmission network.

8. A method in accordance with claim 5 wherein:

the other originated information is transmitted between the one of the plurality of originating processors and the at least one of the plurality of destination processors using a different address than the address used during transmission of the originated information to the at least one RF receiver by the RF information transmission network.

9. A system in accordance with claim 1 wherein:

the system removes from the originated information information added by the electronic mail system containing the plurality of originating processors and adds information, used by the RF information transmission network during transmission of the originated information through the RF information transmission network to the at least one RF receiver in the RF information transmission network, to the originated information.

10. A system in accordance with claim 1 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver.

11. A system in accordance with claim 8 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF

5,631,946

57

plurality of originating processors and adding information, used by the RF information transmission network during transmission of the originated information through the RF information transmission network to the at least one RF receiver in the RF information transmission network, to the originated information. 5

22. A method in accordance with claim 7 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and 10

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver. 15

23. A method in accordance with claim 21 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and 25

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver. 30

24. A system for transmitting originated information from one of a plurality of originating processors, contained in any one of a plurality of electronic mail systems, to at least one RF receiver with the originated information originating from one of the plurality of originating processors and being transmitted by an RF information transmission network to the at least one RF receiver and for transmitting other originated information originating from one of the originating processors with one of the plurality of electronic mail systems without using the RF information transmission network to at least one of a plurality of destination processors comprising: 35

at least one interface, one of the at least one interface connecting at least one of the plurality of electronic mail systems containing the plurality of originating processors to the RF information transmission network; and wherein 55

the originated information is transmitted in association with an address of the one interface from the one of the plurality of originating processors to the one interface with one of the plurality of electronic mail systems responding to the address of the one interface to direct the originated information from the one of the plurality of originating processors to the one interface; and 60

the originated information is transmitted from the one of the at least one interface to the RF information transmission network with an address of the at least one RF receiver to receive the originated information being 65

58

associated with the originated information before transmission of the originated information to the at least one RF receiver.

25. A system in accordance with claim 24 wherein:

a processor is coupled to one of the at least one RF receiver and receives the originated information.

26. A system in accordance with claim 24 wherein:

the one interface stores the originated information, assembles the originated information with originated information received from a plurality of the originating processors into a packet and transmits the packet to the RF transmission network.

27. A system in accordance with claim 24 wherein:

the other originated information is transmitting between the one of the plurality of originating processors and the at least one of the plurality of destination processors using a different address than the address used during transmission of the originated information to the at least one RF receiver by the RF information transmission network.

28. A system in accordance with claim 26 wherein:

the system removes from the originated information information added by the electronic mail system containing the plurality of originating processors and adds information, used by the RF information transmission network during transmission of the originated information through the RF information transmission network to the at least one RF receiver in the RF information transmission network, to the originated information.

29. A system in accordance with claim 26 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver. 35

30. A system in accordance with claim 28 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver. 45

31. A system in accordance with claim 27 wherein:

the system removes from the originated information information added by the electronic mail system containing the plurality of originating processors and adds information, used by the RF information transmission 50

5,631,946

59

network during transmission of the originated information through the RF information transmission network to the at least one RF receiver in the RF information transmission network, to the originated information.

32. A system in accordance with claim 27 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver.

33. A system in accordance with claim 31 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver.

34. A method for transmitting originated information from one of a plurality of originating processors, contained in any one of a plurality of electronic mail systems, to at least one RF receiver with the originated information originating from one of the plurality of originating processors and being transmitted by an RF information transmission network to the at least one RF receiver and for transmitting other originated information originating from one of the originating processors with one of the plurality of electronic mail systems without using the RF information transmission network to at least one of a plurality of destination processors comprising:

connecting at least one of the plurality of electronic mail systems containing the plurality of originating processors to the RF information transmission network with at least one interface;

transmitting the originated information in association with an address of the one interface from one of the plurality of originating processors to the one interface with one of the plurality of electronic mail system responding to the address of the one interface to direct the originated information from the one of the plurality of originating processors to the one interface; and

transmitting the originated information from one of the at least one interface to the RF information transmission network with an address of the at least one RF receiver to receive the originated information being associated with the originated information before transmission of the originated information to the at least one RF receiver.

60

35. A method in accordance with claim 34 further comprising:

one of the at least one RF receiver transmits the originated information to a processor.

36. A method in accordance with claim 34 wherein:

the one interface stores the originated information, assembles the originated information with originated information received from a plurality of the originating processors into a packet and transmits the packet to the RF transmission network.

37. A method in accordance with claim 34 wherein:

the other originated information is transmitted between the one of the plurality of originating processors and the at least one of the plurality of destination processors using a different address than the address used during transmission of the originated information to the at least one RF receiver by the RF information transmission network.

38. A method in accordance with claim 34 further comprising:

removing from the originated information information added by the one of the plurality of electronic mail systems containing the one of the plurality of originating processors and adding information, used by the RF information transmission network during transmission of the originated information through the RF information transmission network to the at least one RF receiver in the RF information transmission network, to the originated information.

39. A method in accordance with claim 34 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver.

40. A method in accordance with claim 38 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver.

41. A method in accordance with claim 36 further comprising:

removing from the originated information information added by the one of the plurality of electronic mail systems containing the one of the plurality of originat-

5,631,946

61

ing processors and adding information, used by the RF information transmission network during transmission of the originated information through the RF information transmission network to the at least one RF receiver in the RF information transmission network, to the originated information.

42. A method in accordance with claim 36 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver.

43. A method in accordance with claim 41 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver.

44. A method in accordance with claim 37 further comprising:

removing from the originated information information added by the one of the plurality of electronic mail systems containing the one of the plurality of originating processors and adding information, used by the RF information transmission network during transmission of the originated information through the RF information transmission network to the at least one RF receiver in the RF information transmission network, to the originated information.

45. A method in accordance with claim 37 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver.

62

46. A method in accordance with claim 44 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information including an identification number of the at least one RF receiver from the RF information transmission network switch to another RF transmission network at a destination of the at least one RF receiver in the RF information transmission network to which the originated information and the identification number is to be transmitted by the RF information transmission network and transmits the originated information and the identification number to the at least one RF receiver by RF broadcast to the at least one RF receiver.

47. A system in accordance with claim 24 further comprising:

a plurality of RF information transmission networks with each RF information transmission network being connected to at least one of the at least one interface with the originated information being transmitted to the at least one RF receiver by one of the plurality of RF information transmission networks through the one of the at least one interface.

48. A method in accordance with claim 34 further comprising:

a plurality of RF information transmission networks with each RF information transmission network being connected to at least one of the at least one interface with the originated information being transmitted to the at least one RF receiver by one of the plurality of RF information transmission networks through the one of the at least one interface.

49. A system in accordance with claim 1 wherein:

information is compared to determine if the originated information should be transmitted by the RF information transmission network.

50. A system in accordance with claim 3 wherein:

information is compared to determine if the originated information should be transmitted by the RF information transmission network.

51. A system in accordance with claim 4 wherein:

information is compared to determine if the originated information should be transmitted by the RF information transmission network.

52. A method in accordance with claim 5 wherein:

information is compared to determine if the originated information should be transmitted by the RF information transmission network.

53. A method in accordance with claim 7 wherein:

information is compared to determine if the originated information should be transmitted by the RF information transmission network.

54. A method in accordance with claim 8 wherein:

information is compared to determine if the originated information should be transmitted by the RF information transmission network.

55. A system in accordance with claim 9 wherein:

information is compared to determine if the originated information should be transmitted by the RF information transmission network.

56. A system in accordance with claim 10 wherein:

information is compared to determine if the originated information should be transmitted by the RF information transmission network.

5,631,946

65

89. A method in accordance with claim 45 wherein: information is compared to determine if the originated information should be transmitted by the RF information transmission network.

90. A method in accordance with claim 46 wherein: information is compared to determine if the originated information should be transmitted by the RF information transmission network.

91. A method in accordance with claim 47 wherein: information is compared to determine if the originated information should be transmitted by the RF information transmission network.

92. A system in accordance with claim 48 wherein: information is compared to determine if the originated information should be transmitted by the RF information transmission network.

93. A method in accordance with claim 5 wherein: the compared information is the address of the at least one RF receiver and permissible numbers.

94. A method in accordance with claim 5 wherein: the address of the at least one RF receiver added to the originated information before transmission of the originated information by the RF transmission network to the at least one RF receiver is added in response to information inputted at the originating processor.

95. A method in accordance with claim 44 wherein: the information inputted at the originating processor is processed to identify the address of the at least one receiver.

96. A method in accordance with claim 7 wherein: the address of the at least one RF receiver added to the originated information before transmission of the originated information by the RF transmission network to the at least one RF receiver is added in response to information inputted at the originating processor.

97. A method in accordance with claim 96 wherein: the information inputted at the originating processor is processed to identify the address of the at least one receiver.

98. A method in accordance with claim 5 wherein: the address of the at least one RF receiver added to the originated information before transmission of the originated information by the RF transmission network to the at least one RF receiver is added in response to information inputted at the originating processor.

99. A method in accordance with claim 98 wherein: the information inputted at the originating processor is processed to identify the address of the at least one receiver.

100. A method in accordance with claim 9 wherein: the address of the at least one RF receiver added to the originated information before transmission of the originated information by the RF transmission network to the at least one RF receiver is added in response to information inputted at the originating processor.

101. A method in accordance with claim 100 wherein: the information inputted at the originating processor is processed to for identify the address of the at least one receiver.

102. A method in accordance with claim 10 wherein: the address of the at least one RF receiver added to the originated information before transmission of the originated information by the RF transmission network to the at least one RF receiver is added in response to information inputted at the originating processor.

66

103. A method in accordance with claim 102 wherein: the information inputted at the originating processor is processed to identify the address of the at least one receiver.

104. A method in accordance with claim 11 wherein: the address of the at least one RF receiver added to the originated information before transmission of the originated information by the RF transmission network to the at least one RF receiver is added in response to information inputted at the originating processor.

105. A method in accordance with claim 104 wherein: the information inputted at the originating processor is processed to identify the address of the at least one receiver.

106. A method in accordance with claim 5 wherein: the address of the one interface is added to the originated information at the one originating processor.

107. A method in accordance with claim 7 wherein: the address of the one interface is added to the originated information at the one originating processor.

108. A method in accordance with claim 5 wherein: the address of the one interface is added to the originated information at the one originating processor.

109. A method in accordance with claim 18 wherein: the address of the one interface is added to the originated information at the one originating processor.

110. A method in accordance with claim 19 wherein: the address of the one interface is added to the originated information at the one originating processor.

111. A method in accordance with claim 20 wherein: the address of the one interface is added to the originated information at the one originating processor.

112. A method in accordance with claim 52 wherein: the address of the one interface is added to the originated information at the one originating processor.

113. A method in accordance with claim 44 wherein: the address of the one interface is added to the originated information at the one originating processor.

114. A method in accordance with claim 45 wherein: the information inputted at the originating processor is processed to identify the address of the at least one receiver.

115. A system for transmitting originated information from one of a plurality of originating processors contained in an electronic mail system to at least one RF receiver with the originated information originating from one of the plurality of originating processors and being transmitted by a RF information transmission network to the at least one RF receiver and for transmitting other originated information originating from one of the plurality of originating processors with the electronic mail system without using the RF information transmission network to at least one of a plurality of destination processors comprising:

at least one interface, one of the at least one interface connecting the electronic mail system containing the plurality of originating processors to the RF information transmission network; and wherein

the originated information is transmitted in association with an address of the one interface from the one of the plurality of originating processors to the one interface with the electronic mail system responding to the address of the one interface to direct the originated information from the one of the plurality of originating processors to the one interface; and

the RF information transmission system provides transmission of the originated information from the one

5,631,946

67

interface through the RF information transmission network to the at least one RF receiver in response to information inputted to the system.

116. A system in accordance with claim 115 wherein:

a processor is coupled to one of the at least one RF receiver and receives the originated information.

117. A system in accordance with claim 115 wherein:

the one interface stores the originated information, assembles the originated information with originated information received from a plurality of the originating processors into a packet and transmits the packet to the RF transmission network.

118. A system in accordance with claim 115 wherein:

the other originated information is transmitted between the one of the plurality of originating processors and the at least one of the plurality of destination processors to a different address than an address to which the originated information is transmitted to the at least one RF receiver by the RF information transmission network.

119. A method for transmitting originated information from one of a plurality of originating processors contained in an electronic mail system to at least one RF receiver with the originated information originating from one of the plurality of originating processors and being transmitted by a RF information transmission network to the at least one RF receiver and for transmitting other originated information originating from one of the plurality of originating processors with the electronic mail system without using the RF information transmission network to at least one of a plurality of destination processors comprising:

connecting the electronic mail system containing the plurality of originating processors to the RF information transmission network with one of at least one interface;

transmitting the originated information in association with an address of the one interface from one of the plurality of originating processors to the one interface with the electronic mail system responding to the address of the one interface to direct the originated information from the one of the plurality of originating processors to the one interface; and

transmitting the originated information through the RF information transmission network to the at least one RF receiver in response to inputted information.

120. A method in accordance with claim 119 further comprising:

one of the at least one RF receiver transmits the originated information to a processor.

121. A method in accordance with claim 120 further comprising:

storing the originated information, assembling the originated information with originated information received from a plurality of the originating processors into a packet and transmitting the packet to the RF transmission network.

122. A method in accordance with claim 119 wherein:

the other originated information is transmitted between the one of the plurality of originating processors and the at least one of the plurality of destination processors to a different address than an address to which the originated information is transmitted to the at least one RF receiver by the RF information transmission network.

123. A system in accordance with claim 115 wherein:

the system removes from the originated information information added by the electronic mail system containing the plurality of originating processors.

68

124. A system in accordance with claim 115 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information is to be transmitted by the RF information transmission network and transmits the originated information to the at least one RF receiver by RF broadcast to the at least one RF receiver.

125. A system in accordance with claim 123 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information is to be transmitted by the RF information transmission network and transmits the originated information to the at least one RF receiver by RF broadcast to the at least one RF receiver.

126. A system in accordance with claim 117 wherein:

the system removes from the originated information information added by the electronic mail system containing the plurality of originating processors.

127. A system in accordance with claim 117 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information is to be transmitted by the RF information transmission network and transmits the originated information to the at least one RF receiver by RF broadcast to the at least one RF receiver.

128. A system in accordance with claim 126 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF receiver in the RF information transmission network to which the originated information is to be transmitted by the RF information transmission network and transmits the originated information to the at least one RF receiver by RF broadcast to the at least one RF receiver.

129. A system in accordance with claim 118 wherein:

the system removes from the originated information information added by the electronic mail system containing the plurality of originating processors.

130. A system in accordance with claim 118 wherein:

the RF information transmission network comprises a RF information transmission network switch which receives the originated information; and

the RF information transmission network transmits the originated information from the RF information transmission network switch to another RF transmission network switch at a destination of the at least one RF

71

receiver in the RF information transmission network to which the originated information is to be transmitted by the RF information transmission network and transmits the originated information to the at least one RF receiver by RF broadcast to the at least one RF receiver.

144. A system in accordance with claim 115 further comprising:

a plurality of RF information transmission networks with each RF information transmission network being connected to at least one of the at least one interface with the originated information being transmitted to the at least one RF receiver by one of the plurality of RF information transmission networks through the one of the at least one interface.

145. A method in accordance with claim 119 further comprising:

a plurality of RF information transmission networks with each RF information transmission network being connected to at least one of the at least one interface with the originated information being transmitted to the at least one RF receiver by one of the plurality of RF information transmission networks through the one of the at least one interface.

146. A system in accordance with claim 115 wherein:

an address of the at least one RF receiver to which the originated information is transmitted by the RF transmission network is inputted to the system before transmission of the originated information from the one interface through the RF information transmission network to the at least one RF receiver.

147. A system in accordance with claim 116 wherein:

an address of the at least one RF receiver to which the originated information is transmitted by the RF transmission network is inputted to the system before transmission of the originated information from the one interface through the RF information transmission network to the at least one RF receiver.

148. A system in accordance with claim 117 wherein:

an address of the at least one RF receiver to which the originated information is transmitted by the RF transmission network is inputted to the system before transmission of the originated information from the one interface through the RF information transmission network to the at least one RF receiver.

149. A system in accordance with claim 118 wherein:

an address of the at least one RF receiver to which the originated information is transmitted by the RF transmission network is inputted to the system before transmission of the originated information from the one interface through the RF information transmission network to the at least one RF receiver.

150. A system in accordance with claim 119 wherein:

an address of the at least one RF receiver to which the originated information is transmitted by the RF transmission network is inputted to the system before transmission of the originated information from the one interface through the RF information transmission network to the at least one RF receiver.

151. A system in accordance with claim 120 wherein:

an address of the at least one RF receiver to which the originated information is transmitted by the RF transmission network is inputted to the system before transmission of the originated information from the one interface through the RF information transmission network to the at least one RF receiver.

152. A system in accordance with claim 121 wherein:

an address of the at least one RF receiver to which the originated information is transmitted by the RF transmission network is inputted to the system before trans-

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 5,631,946

Page 1 of 4

DATED : May 20, 1997

INVENTOR(S) : Thomas J. CAMPANA, Jr. et al.

It is certified that error appears in the above-indentified patent and that said Letters Patent is hereby corrected as shown below:

Column 1, line 35, delete "which are filed on";
line 36, delete "even date herewith".

Column 4, line 48, change "provides" to --provided--.

Column 5, line 27, change "is" to --was--;
line 32, change "are" to --were--;
line 47, change "hi-directional" to --bi-directional--.

Column 6, line 49, change "hi-directional" to --bi-directional--.

Column 7, line 58, change "united states" to --United States--.

Column 15, line 60, after "hub" delete ".".

Column 17, line 8, delete "has been" and insert --was--;
line 40, change "Disclosure of Invention" to
--DISCLOSURE OF INVENTION--.

Column 18, lines 58-67 delete in their entirety.

Column 19, lines 1-29 delete in their entirety.

Column 20, line 4, change "an" to --a--;
line 32, delete "*" and insert --When the RF receiver
119 is connected to the SAFARITM computer, the connection is
powered by the SAFARITM computer--;
line 62, change "an" to --a--.

Column 21, lines 28-29 delete in their entirety.

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 5,631,946

Page 2 of 4

DATED : May 20, 1997

INVENTOR(S) : Thomas J. CAMPANA, Jr. et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 25, line 33 change "14" to --12--.

Column 26, line 1, change "interfaces" to --interfaced--.

In the middle at the bottom of columns 29 and 30 add ---1---.

In the middle at the bottom of columns 31 and 32 add ---2---.

In the middle at the bottom of columns 33 and 34 add ---3---.

In the middle at the bottom of columns 35 and 36 add ---4---.

In the middle at the bottom of columns 37 and 38 add ---5---.

In the middle at the bottom of columns 39 and 40 add ---6---.

In the middle at the bottom of columns 41 and 42 add ---7---.

In the middle at the bottom of columns 43 and 44 add ---8---.

In the middle at the bottom of columns 45 and 46 add ---9---.

In the middle at the bottom of columns 47 and 48 add ---10---.

In the middle at the bottom of columns 49 and 50 add ---11---.

In the middle at the bottom of columns 51 and 52 add ---12---.

Column 53, lines 6 and 53 change "an" to --a--.

Column 54, line 56, change "8" to --9--.

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 5,631,946

Page 3 of 4

DATED : May 20, 1997

INVENTOR(S) : Thomas J. CAMPANA, Jr. et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 56, line 57, change "Rf" to --RF--.

Column 57, line 32, change "Rf" to --RF--;
line 44, change "an" to --a--.

Column 58, line 14, change "transmitting" to --transmitted--;
line 17, change "using" to --uses--.

Column 65, line 9, change "method" to --system--;
line 27, change "44" to --94--;
lines 50, 56 and 60, change "method" to --system--;
line 58, delete "for".

Column 66, lines 1, 5 and 11, change "method" to --system--;
line 21, change "5" to --8--;
lines 48, 52 and 57, change "network" to --system--.

Column 67, lines 1 and 2, 12 and 19 and 20, change "network" to --system--.

Column 68, lines 2, 5, 9, 11, 15, 18, 22, 24, 32, 35, 39, 41, 45, 48, 52, 54, 62 and 65, change "network" to --system--.

Column 69, lines 1, 3, 7, 10, 14 and 16, change "network" to --system--;
line 45, change "Rf" to --RF--.

Column 70, lines 43, 48 and 61, change "method" to --system--;
lines 49, 52, 56, 58, 62 and 65, change "network" to --system--.

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 5,631,946

Page 4 of 4

DATED : May 20, 1997

INVENTOR(S) : Thomas J. CAMPANA, Jr. et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 71, lines 1, 3, 9, 27, 29 and 30, 34, 36 and 37, 41, 43 and 44, 48 and 50 and 51, change "system" to --network--;
lines 8 and 13, change "networks" to --systems--;
lines 52, 59 and 66, change "system" to --method--.

Column 72, line 4, change "system" to --method--;
line 7, delete "to the system";
lines 14, 16 and 17, 21, 23 and 24, 28, 30 and 31, 35, 37 and 38, 42, 44 and 45, 49, 51 and 52, 56, 58 and 59, 63 and 65 and 66, change "network" to --system--.

Column 73, lines 1, 3 and 4, change "network" to --system--;
lines 5, 12, 19, 26, 33, 40, 47, 54 and 61, change "system" to --method--;
lines 8, 15, 22, 29, 36, 43, 50, 57 and 64, delete "to the system".

Column 74, line 18, change "144" to --143--;
line 58, delete "to the system".

Signed and Sealed this

Thirtieth Day of September, 1997

Attest:



BRUCE LEHMAN

Attesting Officer

Commissioner of Patents and Trademarks